

We claim:

1. Suturing instrumentation for suturing tissue comprising:
 - a malleable needle portion having a sharpened distal tip and constructed and arranged to deliver a length of suture material to the tissue;
 - a handheld instrument having a passageway and having a distal end terminating in a nonlinear portion having a first radius; and
 - a force-supplying structure configured for applying a force to the needle portion,

wherein the force-supplying structure includes a distal end capable of pushing the malleable needle portion through the nonlinear portion, such that when the distal end of the handheld instrument is positioned proximate to the tissue to be sutured and the malleable needle portion is pushed by the distal end of the force-supplying structure through the nonlinear portion, the needle portion is deformed, thereby causing the needle portion to deliver the suture material to the tissue.
2. The suturing instrumentation of Claim 1, wherein the handheld instrument includes a proximal insertion opening to receive the distal end of the force-supplying structure.
3. The suturing instrumentation of Claim 1, wherein the distal end of the handheld instrument includes an elongated slot to receive the malleable needle portion from the side,

the slot transitioning to a narrower slit along the nonlinear portion, enabling the suture material to extend from the slit as the needle portion is pushed through the nonlinear portion.
4. The suturing instrumentation of Claim 1, wherein the malleable needle portion has a degree of spring back of from 0 to about 100 percent.

5. The suturing instrumentation of Claim 4, wherein the malleable needle portion has a degree of spring back of from 0 to about 10 percent.
6. The suturing instrumentation of Claim 4, wherein the malleable needle portion has a degree of spring back of from about 90 to about 100 percent.
7. The suturing instrumentation of Claim 1, wherein the malleable needle portion comprises a Nitinol needle.
8. The suturing instrumentation of Claim 7, wherein the Nitinol needle is formed into a curved shape having a radius substantially equal to the first radius, further wherein the Nitinol needle is forcibly straightened when located in the handheld instrument and substantially regains the curved shape after leaving the handheld instrument.
9. The suturing instrumentation of Claim 7, wherein the Nitinol needle is substantially linear in shape, further wherein the Nitinol needle is forcibly curved when forced through the nonlinear portion of the handheld instrument and substantially regains the linear shape after leaving the handheld instrument.
10. Suturing instrumentation for suturing tissue comprising:
 - a malleable needle portion having a sharpened distal tip and constructed and arranged to deliver a length of suture material to the tissue;
 - a handheld instrument having a passageway and having a distal end terminating in a nonlinear portion having a first radius; and
 - a force-supplying structure configured for applying a force to the needle portion,wherein the force-supplying structure includes a distal end capable of pushing the malleable needle portion through the nonlinear portion, such that when the distal end of the handheld instrument is positioned proximate to the tissue to be sutured and the malleable

needle portion is pushed by the distal end of the force-supplying structure through the nonlinear portion, the needle portion is deformed, thereby causing the needle portion to deliver the suture material to the tissue; and

a jaw pivotally coupled to the distal end of the handheld instrument for holding tissue as the needle portion and suture material enters into the tissue.

11. The suturing instrumentation of Claim 10, wherein the jaw includes an aperture, slot, or cavity to receive the deformed needle portion.

12. The suturing instrumentation of Claim 10, wherein the handheld instrument includes a proximal insertion opening to receive the distal end of the force-supplying structure.

13. The suturing instrumentation of Claim 10, wherein the distal end of the handheld instrument includes an elongated slot to receive the malleable needle portion from the side,

the slot transitioning to a narrower slit along the nonlinear portion, enabling the suture material to extend from the slit as the needle portion is pushed through the nonlinear portion.

14. The suturing instrumentation of Claim 10, wherein the malleable needle portion has a degree of spring back of greater than 0 to about 100 percent.

15. The suturing instrumentation of Claim 14, wherein the malleable needle portion has a degree of spring back of greater than 0 to about 10 percent.

16. The suturing instrumentation of Claim 14, wherein the malleable needle portion has a degree of spring back of from about 90 to about 100 percent.

17. The suturing instrumentation of Claim 10, wherein the malleable needle portion comprises a Nitinol needle.

18. The suturing instrumentation of Claim 17, wherein the Nitinol needle is formed into a curved shape having a radius substantially equal to the first radius, further wherein the Nitinol needle is forcibly straightened when located in the handheld instrument and substantially regains the curved shape after leaving the handheld instrument.

19. The suturing instrumentation of Claim 17, wherein the Nitinol needle is substantially linear in shape, further wherein the Nitinol needle is forcibly curved when forced through the nonlinear portion of the handheld instrument and substantially regains the linear shape after leaving the handheld instrument.

20. The suturing instrumentation of Claim 10, further including a manually operated control enabling a user to open and close the jaw.

21. A suture needle adapted for use with a handheld instrument defining an axis and having an off-axis distal end, the needle comprising:

a length of material having a sharpened distal tip and constructed and arranged to deliver a length of suture material; and

the material of the needle being malleable, such that when the needle is pushed through the handheld instrument, it elastically deforms in accordance with the off-axis distal end.

22. The suture needle of Claim 21, wherein the length of material includes one or more flat sides to resist rotation as the needle passes through the off-axis portion of the handheld instrument.

23. The suture needle of Claim 22, wherein the length of material includes opposing flat sides.

24. The suture needle of Claim 21, wherein the length of material includes one or more indented portions to assist with deformation as the needle passes through the off-axis portion of the handheld instrument.

25. The suture needle of Claim 21, wherein the length of the needle is about 15 mm or less.

26. A suturing system comprising:

a malleable needle portion having a sharpened distal tip and constructed and arranged to deliver a length of suture material;

a handheld instrument having a passageway and having a distal end terminating in a nonlinear portion; and

a push member configured for movement in the passageway of the handheld instrument, the push member being operative to push the malleable needle portion through the nonlinear portion, such that when the distal end of the handheld instrument is positioned proximate to a tissue to be sutured and the needle portion is pushed by the push member through the nonlinear portion, the needle portion is deformed and enters into the tissue and delivers the suture material to the tissue being sutured.

27. The suturing system of Claim 26, wherein the needle portion is substantially straight when in at least a portion of the passageway, curved when in the distal end, and curved upon exiting the distal end of the handheld instrument.

28. The suturing system of Claim 26, wherein the needle portion is substantially straight when in at least a portion of the passageway, curved when in the distal end, and substantially straight upon exiting the distal end of the handheld instrument.

29. The suturing system of Claim 26, wherein the malleable needle portion has a degree of spring back of greater than 0 to about 100 percent.
30. The suturing system of Claim 29, wherein the malleable needle portion has a degree of spring back of greater than 0 to about 10 percent.
31. The suturing system of Claim 29, wherein the malleable needle portion has a degree of spring back of from about 90 to about 100 percent.
32. The suturing system of Claim 26, wherein the malleable needle portion comprises a Nitinol needle.
33. A method for suturing, comprising the steps of:
providing a malleable needle portion having a sharpened distal tip;
positioning the needle portion in a passageway of a handheld instrument;
providing a suture material to be delivered by the needle portion; and
using a push member to push the needle portion in the handheld instrument,
the needle portion upon exiting the handheld instrument penetrating the tissue being sutured
and delivering the suture material to the tissue being sutured.
34. The method of Claim 33, wherein the handheld instrument has a distal end terminating in a nonlinear portion, and the needle portion is deformed as it traverses the nonlinear portion.
35. The method of Claim 33, wherein the needle portion is substantially straight when in at least a portion of the passageway of the handheld instrument, curved when in the distal end, and curved upon exiting the distal end of the handheld instrument.

36. The method of Claim 33, wherein the needle portion is substantially straight when in at least a portion of the passageway of the handheld instrument, curved when in the distal end, and substantially straight upon exiting the distal end of the handheld instrument.
37. The method of Claim 33, wherein the malleable needle portion has a degree of spring back of greater than 0 to about 100 percent.
38. The method of Claim 37, wherein the malleable needle portion has a degree of spring back of greater than 0 to about 10 percent.
39. The method of Claim 37, wherein the malleable needle portion has a degree of spring back of from about 90 to about 100 percent.
40. The method of Claim 33, wherein the malleable needle portion comprises a Nitinol needle.